

Appl. No. 10/516,363
In re Bittner et al.
Reply to Office Action of June 23, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An electromagnetic frictionally engaged friction clutch (1; 20) to be arranged within in a drive train connecting a drive motor and a vehicle door selectively driven by the drive motor between open and closed positions or a vehicle flap, having the following features the clutch comprising:

- a) — the clutch (1; 20) comprises a rotor part (4) which is provided with a friction lining (2) and is firmly drivingly connected to a first shaft (3) so as to rotate therewith with it and, on its side facing away from the friction lining (2);
an electric coil (6) [[is]] arranged on a side of the rotor part (4) facing away from the friction lining (2), and
an armature disk (10) which is firmly drivingly connected to a second shaft (9) so as to rotate therewith with it but can and be displaced axially movable relative to the second shaft (9);
- b) — arranged on the rotor part (4) in addition to the electric coil (6) is at least one permanent magnet (15) arranged on the rotor part (4), the at least one permanent magnet (15)

having a magnetic force such [[so]] that when the coil (6) is not energized, the armature disk (10) is pressed against the friction lining (2) of the rotor part (4) with a friction force which is high enough for the vehicle door or vehicle flap to remain securely in the respective open position assumed when the electric coil (6) is not energized clutch (1; 20) is disengaged and such that, during subsequent manual operation of the vehicle door or vehicle flap, the frictional connection between armature disk (10) and friction lining (2) can be overcome.

Claim 2 (currently amended): The clutch as claimed in claim 1, characterized in that further including the armature disk (10) can be acted on in the axial direction by at least one resilient element (21) biasing the armature disk (10) toward the rotor part (4) in such a way that, when the electric coil (6) is not energized, on account of the permanent magnet (15) and the resilient element (21) together, the armature disk (10) is pressed by the permanent magnet (15) and the resilient element (21) against the friction lining (2) of the rotor part (4) with a force which is high enough for the vehicle door or vehicle flap to remain securely in the respective position assumed when the clutch (1; 20) is disengaged and, during subsequent manual operation of the vehicle door or vehicle flap, the frictional connection between armature disk (10) and friction lining (2) can be overcome.

Claim 3 (currently amended): The clutch as claimed in claim 2, characterized in that wherein the resilient element (21) is one of a compression spring, a disk spring, a corrugated disk

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and [[or]] a rubber buffer.

Claim 4 (currently amended): The clutch as claimed in claim 1, ~~characterized in that~~
wherein the second shaft (9) is ~~firmly~~ drivingly connected on the outside to an armature disk
carrier (11) so as to rotate therewith with it, the armature disk carrier (11) latter comprising
comprises axial guide parts (12) which engage [[in] corresponding groove-like recesses (13) in
the armature disk (10).

Claim 5 (currently amended): The clutch as claimed in claim 2 [[4]], ~~characterized in that~~
wherein one of the second shaft (9) and [[or]] the armature disk carrier (11) contains at least one
open blind drilled hole (22) on the side facing the armature disk (10) in order to accommodate
the ~~compression spring~~ at least one resilient element (21).

Claim 6 (currently amended): The clutch as claimed in claim 1, ~~characterized in that~~
wherein, on its side facing away from the friction lining (2), the rotor part (4) has a recess (5) in
which the coil (6) is at least partly arranged.

Claim 7 (currently amended): The clutch as claimed in claim 1, ~~characterized in that~~
wherein the coil (6) is ~~mounted~~ fixed to the rotor part (4) housing.

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Claim 8 (currently amended): The clutch as claimed in ~~one of claims 1 to 7~~ claim 1, characterized in that wherein, on its side facing the rotor part (4), the armature disk carrier (11) has [[a]] an annular sealing lip (14) which extends over the entire circumference and covers completely covering the friction lining (2) of the rotor part (4) ~~completely~~.

Claim 9 (currently amended): A method for operating the clutch as claimed in claim 1, characterized in that wherein, in order to engage the clutch (1; 20), the electric coil (6) has applied to it a current which causes a magnetic field oriented in the same direction as the magnetic field of the permanent magnet (15), so that the armature disk (10) is pressed firmly against the friction lining (2) of the rotor part (4), and in that, in order to disengage the clutch (1; 20), the electric coil (6) has applied to it a current which produces a magnetic field oriented in the opposite direction to the magnetic field of the permanent magnet (15), so that the armature disk (10) is not pressed or pressed only loosely against the friction lining (2) of the rotor part (4).

Claim 10 (currently amended): The method as claimed in claim 9, characterized in that wherein the electric coil (6) has a current applied to it which has a value dependent on the respective position of the vehicle door or vehicle flap.

Claim 9 (currently amended): The A-method for operating the clutch as claimed in claim

1, ~~characterized in that~~ wherein, in order to engage the clutch (1; 20), an electric current is applied to the electric coil (6) ~~has applied to it a current which causes~~ for creating a magnetic field oriented in the same direction as the magnetic field of the permanent magnet (15), so that the armature disk (10) is pressed firmly against the friction lining (2) of the rotor part (4), and ~~in that~~ wherein, in order to disengage the clutch (1; 20), the electric current is applied to the electric coil (6) ~~has applied to it a current which produces~~ for creating a magnetic field oriented in the opposite direction to the magnetic field of the permanent magnet (15), so that the armature disk (10) is not pressed or pressed only loosely against the friction lining (2) of the rotor part (4).

Claim 10 (currently amended): The clutch method as claimed in claim 9, ~~characterized in that~~ wherein the electric current applied to the electric coil (6) ~~has a current applied to it which~~ has a value dependent on the respective position of the vehicle door ~~or vehicle flap~~.